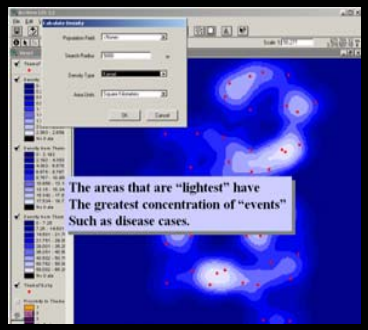
What is a GIS?

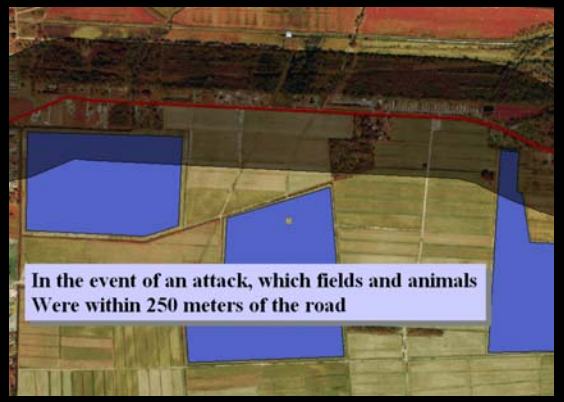


Investigate and Manipulate Spatial Data

Store spatial Data

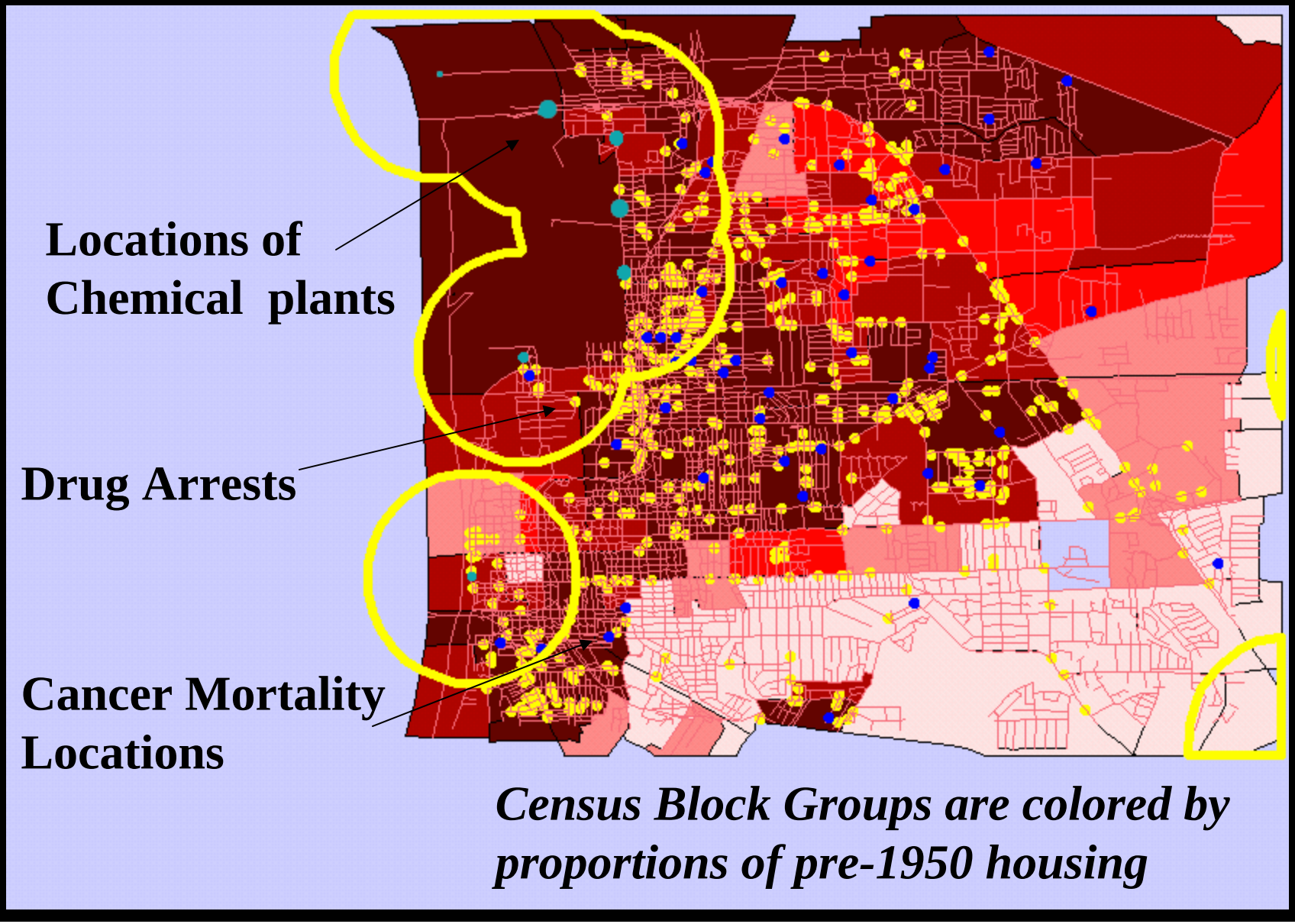
Visualize Spatial Data

Analyze Spatial Data



GIS as tool box

Transform data…display data….achieve goal



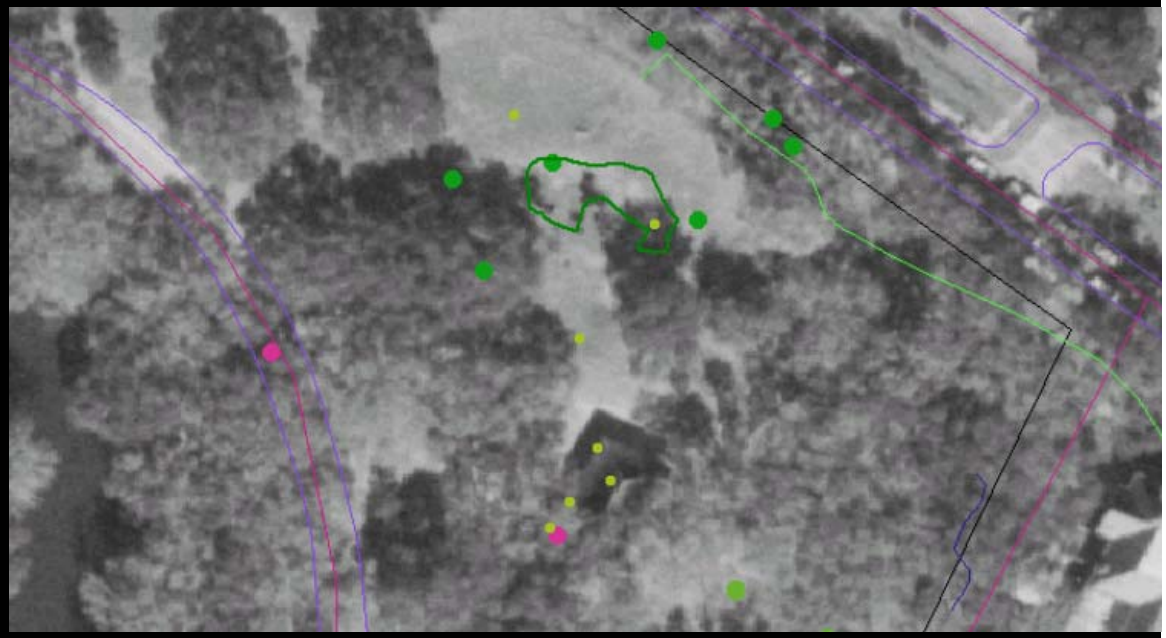
Census Block Groups are colored by proportions of pre-1950 housing

Geographic Information Science

"The generic issues that surround the use of GIS….."

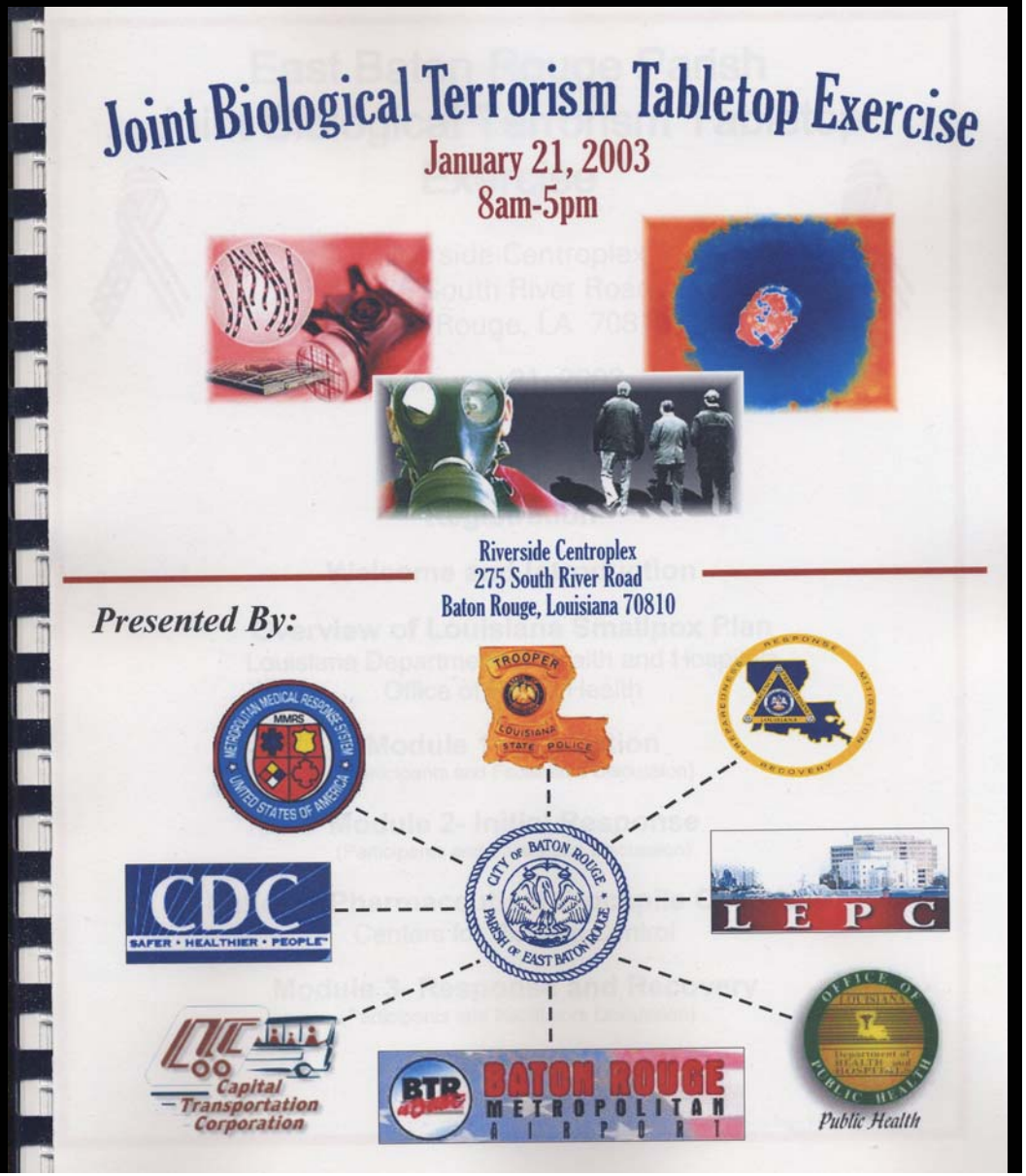
Includes... remote sensing
GPS
Air Photos

Cartography
visualization
modeling
database construction
cognition
social impacts



Incorporating GIS into an All-Hazard Preparedness Plan

Why use Bioterrorism as an example?



Any Hazard or Disaster will evolve spatially.
There will be an initial point of impact
whether an earthquake epicenter,
a Tornado path, a derailed train carrying chemicals.

There will be a geography to the disaster, either defined socially,
such as where people live, or physically,
such as down-river areas prone to flooding

Spatial data, spatial technologies and spatial models are needed to understand and respond to any disaster. A BT attack provides a perfect example of all these processes at work

And….

Homeland Security presidential directive #8
on national preparedness states:

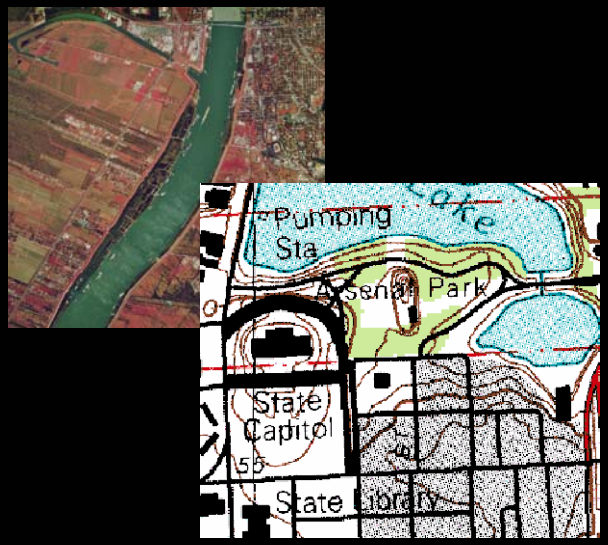
"*The term "all-hazards preparedness" refers to preparedness for domestic attacks, major disasters, and other emergencies".*

In other words, strategies developed specifically for a BT incident should be designed with transferability in mind.

The Emergency Operation Center (EOC) should design its GIS for all events

The Ideal Model

Traditional Spatial Data



Agency 1

Agency 2

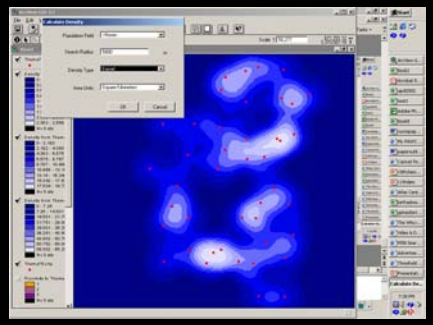
Agency 3

Multi-agency access (Enterprise GIS)

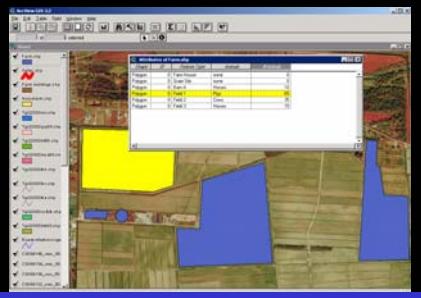
Field Validation

Quick input Of "new" data

"Peace-Time Data Collection"

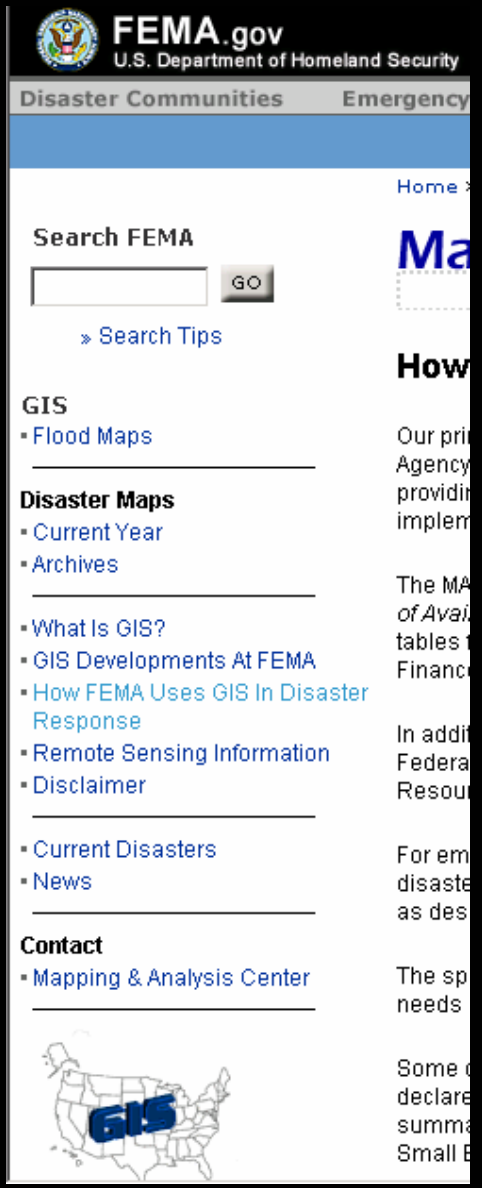


GIS Analysis of Outbreak Data



Surveillance Report Of Outbreak

There are Federal GIS groups aimed At Disaster Preparedness / Homeland Security



FEMA.gov
U.S. Department of Homeland Security

Disaster Communities | Emergency Personnel | Education & Training | News Media | Regions

Home » Maps » GIS » How FEMA Uses GIS In Disaster Response

Search FEMA

GO

» Search Tips

GIS
- Flood Maps

Disaster Maps
- Current Year
- Archives

- What Is GIS?
- GIS Developments At FEMA
- How FEMA Uses GIS In Disaster Response
- Remote Sensing Information
- Disclaimer

- Current Disasters
- News

Contact
- Mapping & Analysis Center

Mapping & Analysis Center

Geographic Information Systems

How FEMA Uses GIS In Disaster Response

Our primary mission remains the dissemination of geographic information to the EST/ESF#5 (*Information and Planning*), and the rest of the Agency during disaster operations, and the enhancement of information services. Our current concept of operations is expanding to include providing a full range of GIS services to all FEMA program offices. In addition, the MAC has become the cornerstone for developing and implementing an integrated, state-of-the-art enterprise GIS (E-GIS) for the Agency.

The MAC maintains an extensive array of data sets to ensure our ability to provide our customers with the information they need. *(See Index of Available Data)*. The MAC can also produce maps from important model output, damage assessment data, as well as, maps and/or tables from FEMA Human Services, National Emergency Training Center (NETC), National Processing Service Center (NPSC), and Disaster Finance Center (DFC) statistics in federally-declared counties.

In addition to providing GIS maps, tables and analyses during disasters and emergencies, the E-GIS Team supports planning exercises, the Federal Insurance and Mitigation Administration, the Office of National Preparedness, the Office of Homeland Security, the Administration and Resource Planning Directorate, as well as, the Agency's ad-hoc GIS requirements.

For emergency managers, a GIS can facilitate critical decision-making before a disaster impacts an area. In the early, crucial stages of a disaster or emergency and throughout the disaster process, managers use GIS products because they provide important information, such as described above, quickly and in easy-to-understand formats.

The specific products the MAC typically generates in a disaster or an emergency varies with the nature and scope of the situation and the needs of our customers.

Some of our most frequently requested maps include: storm track and damage prediction maps, remote sensing maps, maps of federally-declared counties in an affected state, basic census demographics about an affected area by county and census block, street locations, and summaries of teleregistered and service center applicants, housing inspection numbers, Helpline calls, disaster unemployment claims, Small Business Administration (SBA) applicants, etc.

….dissemination of geographic information…

MAC is an example of an Enterprise GIS

Can have GIS experts perform tasks

Ideally though, non GIS-expertise Should be able to ask and answer Questions….and make maps

Some of their most frequently requested maps include:

Remote sensing maps

Maps of federally-declared counties in an affected state

Basic census demographics (county and census block)

Street locations

Helpline calls

Non-bioterrorism: hurricane tracks, disaster unemployment claims, Small Business Administration (SBA) applicants, etc.

IT Mapping & Analysis Center

From their website…

Soon after the disaster event, FEMA managers and staff use GIS to visualize actual damages by analyzing collected aerial reconnaissance and ground truth data. Using GIS, MAC customers (i.e. Disaster Field Office (DFO), Emergency Support Team (EST) personnel, etc.) can see the spatial extent of damage, learn who was affected by the disaster and which resources were affected. Management and staff can then use this data to distribute resources and coordinate with other federal and state agencies and organizations. Staff from the Federal Insurance and Mitigation Administration (FIMA) and other offices often use GIS produced EPA Super Fund Site and Repetitive Loss Claim Maps for information and planning purposes.